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Joseph A. Kwak

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EXAMINER

RYMAN, DANIEL J

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/085,187 | <b>Applicant(s)</b><br>KWAK, JOSEPH A. |  |
|                              | <b>Examiner</b><br>Daniel J. Ryman   | <b>Art Unit</b><br>2616                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 1 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date: _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/05;3/06;4&amp;6/06</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Examiner acknowledges Applicant's filing of an RCE on 21 August 2006.
2. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

### ***Information Disclosure Statement***

3. The information disclosure statements filed 9 March 2006, 18 April 2006, and 15 June 2006 fail to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

### ***Claim Objections***

4. Claim 1 is objected to because of the following informalities: in line 6, "the error" should be "an error" since "the error check sequence" lacks antecedent basis; in line 6, "check sequences" should be "check sequences to each packet" in order to clarify to what the error check sequences are appended; in line 11, "received" should be "received within a predetermined period of time" since a retransmission will only be sent if an ACK has not been received in the time it would normally take to have the packet reach the receiver and to have the corresponding ACK reach the transmitter; and in line 13, "each particular" should be "the particular" and "modulation using" should be "modulation of each packet using". Appropriate correction is required.

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5. Claim 7 is objected to because of the following informalities: in lines 15-16, “combining a received packet with a retransmitted original or selectively modified packet” should be “combining a retransmitted original or selectively modified packet with a received packet” since not all received packets are combined but all retransmitted packets are. Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 discloses selecting an encoding/data modulation based on collected retransmission statistics. It is unclear whether the collection of the retransmission statistics and the selection of the modulation occur in the transmitter (here the base station) or the receiver (here the subscriber). From the context of the claim, it appears that these steps occur within the subscriber since the preamble recites “[a] method for adjusting data modulation at a subscriber.” However, the only encoding/data modulation that occurs in claim 7 happens in the base station, i.e. claim 7 recites that the subscriber “receiv[es] packets of data over said air interface, each packet having a particular encoding/data modulation.” Simply, the claim never requires the subscriber to perform encoding/data modulation. Thus, if the selecting and collecting steps are interpreted to occur within the subscriber, then the claim requires varying the modulation performed by the base station according to retransmission statistics collected in the subscriber. This is not enabled by Specification, which explicitly requires that the retransmission statistics be

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collected by the device transmitting the packets. Specification: paragraph 9. But, as indicated above, the collecting and selecting steps are not clearly occurring within the base station since the claim is directed to “adjusting data modulation at a subscriber.” Examiner suggests amending claim 9 to clearly recite that the subscriber transmits packets formatted according to a particular encoding/data modulation, where the subscriber collects retransmission statistics and selects an encoding/data modulation scheme based on these statistics. Since Examiner cannot determine the metes and bounds of claims 7-9, Examiner will not examine these claims for the purposes of prior art rejections. Rather, Examiner will rely on the rejection of claims 1-8 to indicate to Applicant the state of the prior art.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 2, and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm et al. (USPN 6,208,663) in view of Dirschedl et al. (USPN 6,262,994).

10. Regarding claim 1, Schramm discloses a method for adjusting data modulation at a subscriber unit (col. 5, lines 47-58, where both the mobile station, i.e. “subscriber,” and the base station support multiple modulation schemes), comprising: receiving data at a transmitter for transmission (col. 5, lines 59-65, where an LLC frame is received at the transmitter for transmission); formatting the received data into packets for transmission, each packet having a particular type of encoding/data modulation (col. 5, lines 59-65, where the LLC is formatted into

RLC blocks, where the modulation scheme for transmission of an RLC block changes depending on the circumstances); appending error check sequences (Fig. 2 and col. 3, line 16, where each packet has a block check sequence appended thereto); transmitting the packets (col. 5, lines 47-58, where it is inherent that a “transmitting entity” transmits to a “receiving entity”); monitoring a return channel for receipt of an acknowledgment for each packet that that packet has been received (col. 6, lines 60-67, where the receiver “signals [to transmitter] for retransmission of block 40 using any well known ARQ routine” and where Examiner takes official notice that sending acknowledgements for each properly received packet is a “well-known ARQ routine”); retransmitting an original or selectively modified packet at the transmitter (col. 7, lines 14-20, where the system “retrieves the FEC encoded block identified in a negative ARQ acknowledgement from storage” such that an “original or selectively modified packet” is retransmitted), if an acknowledgment for that packet has not been received (where a retransmission is sent upon receipt of a negative ARQ acknowledgement, col. 7, lines 14-17, and where ARQ signaling is performed according to well known ARQ routines, col. 6, lines 60-67, such that a packet is retransmitted if an acknowledgment for that packet has not been received given, as outlined above, that a positive ARQ acknowledgement comprises a ACK signal); collecting retransmission statistics (col. 7, lines 6-9, where the transmitter counts the number of requests for retransmitted blocks, i.e. “collects retransmission statistics”); and adjusting the particular encoding/data modulation using the collected retransmission statistics, wherein if the collected retransmission statistics indicate a low number of retransmissions, a higher capacity encoding/modulation scheme is selected as the particular encoding/data modulation and if the collected retransmission statistics indicate a high number of retransmissions, a lower capacity

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encoding/data modulation scheme is selected as the particular encoding/data modulation (col. 7, lines 1-9, where if an error rate is high, as indicated by a high number of requests for retransmission, then the transmitter will select a modulation “designed to have improved noise and/or interference resistance”).

Schramm does not expressly disclose adjusting the particular encoding/data modulation of each packet. Rather Schramm teaches that adjusting the particular encoding/data modulation for only retransmitted packets (col. 3, line 65-col. 4, line 3). Dirschedl teaches, in a system for adjusting the encoding/data modulation of packets based on error rates, adjusting the particular encoding/data modulation of each packet because this optimizes the data transmission (col. 1, lines 30-41). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the particular encoding/data modulation for each packet in order to optimize the data transmission.

11. Regarding claim 2, Schramm in view of Dirschedl discloses that the particular type of encoding/data modulation is forward error correction (FEC) (Schramm: col. 5, lines 47-58, where FEC varies in addition to or independent of modulation).

12. Regarding claim 4, Schramm in view of Dirschedl suggests that the packets are transmitted using a single carrier having a frequency domain equalization (SC-FDE) air interface (Schramm: col. 4, lines 49-56, where the invention is usable in FDMA systems and any hybrids thereof).

13. Regarding claim 5, Schramm in view of Dirschedl discloses that return channel is a fast feedback channel (Schramm: col. 6, lines 60-67, where the TDM control channel provided for signaling for retransmission is, as broadly defined, a “fast feedback channel” since the control

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channel is devoted to signaling for retransmission) when the packets are transmitted using a code division multiple access (CDMA) air interface (Schramm: col. 4, lines 49-56, where the invention is usable in CDMA systems).

14. Regarding claim 6, Schramm in view of Dirschedl discloses identifying a packet as having an unacceptable error rate responsive to receipt of a negative acknowledgment (Schramm: col. 7, lines 14-20).

15. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm et al. (USPN 6,208,663) in view of Dirschedl et al. (USPN 6,262,994) as applied to claim 2 above, and further in view of Barton (USPN 6,499,246), of record.

16. Regarding claim 3, Schramm in view of Dirschedl does not expressly disclose that the packets are transmitted using an orthogonal frequency division multiple access (OFDMA) air interface and the FEC encoding/data modulation adjusting is performed in addition to selective nulling of subchannels in an OFDMA set. However, Schramm in view of Dirschedl does disclose that the system can be used in a variety of types of access methodologies (Schramm: col. 4, lines 49-56). Barton teaches, in a wireless system employing FEC (col. 8, line 64-col. 9, line 3), that OFDM “is well-known in the industry...[as] an effective means of mitigating Intersymbol Interference (ISI)” (col. 1, lines 29-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an OFDMA system in order to mitigate Intersymbol Interference. Barton also teaches that it is well known to null subchannels in an OFDM system in order to lower PAR (col. 11, lines 34-38). Examiner notes that Applicant does not specifically define “nulling of subchannels” in the claim such that Examiner is free to interpret “nulling of subchannels” in any manner, as long as the interpretation is reasonable. It



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would have been obvious to one of ordinary skill in the art at the time of the invention to perform FEC encoding/data modulation adjusting in addition to selective nulling of subchannels in an OFDMA set in order to perform data correction (FEC) and lower PAR (selective nulling) in an OFDMA system.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel J Ryman  
Examiner  
Art Unit 2616

*Daniel Ryman*